

Moisture, Clouds, Precipitation Exam CP

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RH = Relative Humidity

(1-6) Identify each phase change process. Please double check your spelling for the phase change process name. Type answers in the following format: all lower case. **CHECK SPELLING!**

Word Bank: **Sublimation, Evaporation, Melting, Freezing, Deposition, Condensation**

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|-------------------------------|-------------------------------|
| 1. Solid \Rightarrow Liquid | 4. Gas \Rightarrow Solid |
| 2. Gas \Rightarrow Liquid | 5. Liquid \Rightarrow Solid |
| 3. Solid \Rightarrow Gas | 6. Liquid \Rightarrow Gas |
7. In an environment with low humidity, what observation would someone likely make regarding a sling psychrometer?
- a. no difference between wet and dry bulb temperatures
 - b. small difference between wet and dry bulb temperatures
 - c. large difference between wet and dry bulb temperatures
 - d. both wet and dry bulb temperatures around 0°C
8. Which factor(s) affect relative humidity?
- a. temperature
 - b. humidity
 - c. condensation nuclei
 - d. concentration on N₂ and O₂
 - e. all of the above
 - f. a and b only
9. If the amount of water vapor in an air parcel stays the same, but air temperature decreases, what happens to the relative humidity?
- a. nothing
 - b. increases
 - c. decreases
 - d. becomes zero
10. What does it mean when we say the air is saturated?
- a. 100% RH
 - b. 50% RH
 - c. 25% RH
 - d. 0% RH
11. What happens to a parcel of air if it ascends (rises into the atmosphere)?
- a. is compressed and heats
 - b. expands and cools
 - c. is compressed, and cools
 - d. expands and heats
12. Describe what happens to a parcel of air if it descends.
- a. is compressed and heats
 - b. expands and cools
 - c. is compressed, and cools
 - d. expands and heats
13. Which lifting mechanism involves physical features of Earth's surface?
- a. frontal wedging
 - b. convergence
 - c. orographic lifting
 - d. localized convective lifting

- 14.** The total amount of water vapor in the atmosphere (by volume) usually does not exceed _____.
a. 50%
b. 28%
c. 14%
d. 4%
- 15.** A cloud is best described as:
a. A concentration of gasses such as Oxygen and Water Vapor
b. Smoke
c. A concentration of water droplets and ice crystals
d. Steam
e. A concentration of evaporated water droplets
f. Dew
- 16.** Clouds form mainly as a result of:
a. rising air
b. cooling air
c. increase in relative humidity
d. increase in humidity
e. all of the above
- 17.** What must condition must be present to allow condensation to occur?
a. RH = 100%
b. unsaturated air
c. RH = 50%
d. warm air
- 18.** Clouds are named according to their...
a. composition and altitude
b. altitude and appearance
c. longevity and composition
d. appearance and composition
- 19.** Which is the largest cloud in terms of vertical development?
a. cumulus
b. stratocumulus
c. altocumulus
d. cumulonimbus
- 20.** If the condensation level = 2000m, and an air parcel's surface temperature = 20°C, what would the temperature of the air parcel be at 4km given that the Dry Adiabatic Lapse Rate = 10°C and the Wet Adiabatic Lapse Rate = 5°C? (Hint: draw diagram on scrap paper)
a. 0°C
b. 10°C
c. -10°C
d. -20°C
e. -5°C
- 21.** Localized Convective Lifting requires...
a. similar air masses
b. a warm surface
c. a physical feature
d. different air masses

- 22.** What can serve as condensation nuclei?
- a. salt
 - b. dust
 - c. smoke
 - d. pollution
 - e. all of the above
- 23.** Which type of cloud is primarily composed of ice crystals?
- a. cirrus
 - b. stratus
 - c. cumulus
 - d. cumulonimbus
- 24. True/False:** Fog is a type of cloud which can form when air cools to the dew point or becomes saturated.
- 25.** Which of the following forms when supercooled raindrops freeze on contact with solid objects near Earth's surface?
- a. freezing rain
 - b. hail
 - c. sleet
 - d. snow
- 26.** Nearly all precipitation begins as _____ high up in the troposphere.
- a. freezing rain
 - b. hail
 - c. rain
 - d. snow
- 27.** Frontal Wedging is a lifting mechanism that involves _____.
- a. a mountain range acting as a barrier to moving air
 - b. a warm or cold front vertically displacing a warm air mass
 - c. a relatively warm surface which heats the air above cause that air to rise
 - d. two similar air masses flowing into the same location
- 28.** What time of a 24 hour day would usually have the highest relative humidity?
- a. early morning
 - b. middle of the night
 - c. noon
 - d. afternoon
- 29.** Who named the clouds in the early 1800's?
- a. Benjamin Franklin
 - b. Isaac Newton
 - c. Barack Obama
 - d. Luke Howard
 - e. Alfred Wegener